

NOTES ON THE PANAMA THRUSH-WARBLER.

BY HUBERT LYMAN CLARK.¹

THANKS to the kindness of Mr. Outram Bangs, I have recently had the opportunity of examining some fine alcoholic material of the Panama Thrush-Warbler, *Rhodinocichla rosea cximia* Ridgway. Mr. Bangs called my attention to the fact that the systematic position of this bird is still unsettled and he suggested that a study of some of the anatomical details of its structure might throw light on its relationships. For his kindness in placing the material in my hands, without restrictions, and for the loan of skins of several other genera which I wished to examine, I desire to express here my hearty thanks to Mr. Bangs.

I should be rash indeed if I expected to actually settle, by these notes, the systematic position of *Rhodinocichla* for like many another genus of Passerine birds, this one approaches more or less nearly several different families and with which one it is most closely affiliated is largely a matter of opinion. All I hope to do is to point out some features of the anatomy not previously known, summarize those which have been described, and express my own opinion as to the relationship which these facts seem to indicate.

Bill. The bill is rather slender, about 18 mm. long, 5 mm. wide at base and 8 mm. deep at the same point. The upper mandible is distinctly curved but the lower is remarkably straight. The tomia are entire with neither tooth nor notch, and the same is true of the edges of the upper mandible except near the tip, where there is a large, rounded notch. This notch is exactly like that which is found in the same position in the bill of certain tanagers, *Eucometis*, *Mitrospingus*, etc. Indeed, the bill of *Rhodinocichla* is more like that of *Mitrospingus* than like that of any other bird with which I have compared it.

Nostrils. The nostrils show no distinctive character. They are ellipsoidal, longer than high and quite bare; the skin back of

¹ Read at the meeting of the American Ornithologists' Union, November 13, 1912.

them is free from feathers for a couple of millimeters. There is no projecting ridge or fold above them such as occurs in many Mniotiltidæ. In *Eucometis* and *Mitrospingus*, the feathers come close up to the posterior end of the nostril.

Tongue. The tongue ends in two points, one on each side; there is a series of fine teeth or serrations on each side, each tooth being larger than its proximal neighbor, so that the terminal tooth is the largest. Sometimes the two terminal teeth on each side are of equal size. This sort of a tongue occurs in many Passerine birds which have no close relationship, as the Catbird and the Scarlet Tanager. It is not therefore in any way distinctive.

Pterylosis. The head is fully feathered with no special apteria nor is there any unusual arrangement of feathers in longitudinal series. The upper cervical tract is narrow at first but becomes broader and more densely feathered between the shoulders and then becomes narrow again before joining the dorsal tract. This enlargement of the cervical tract is the only characteristic feature of the general pterylosis. It has not been reported for any other Passerine bird so far as I know, but a somewhat similar arrangement is found in the kingfishers. The cervical tract anterior and posterior to this enlargement is, in *Rhodinocichla*, only three or four feathers wide but the enlargement is six feathers wide. The rhombic dorsal saddle is well-marked and symmetrical and resembles that of *Piranga erythromelas* and many other Passeres. The pterylosis of the lower surface shows no peculiarities save that the ventral tracts are unusually short, narrow and ill-defined. The primaries are rather short and the secondaries long, giving the wing the short, rounded shape characteristic of the genus. The really remarkable fact here is the shortness of the eighth and ninth primaries. In the Mniotiltidæ (with few exceptions) and in most tanagers, the eighth primary is one of the longest and the ninth is little shorter and is longer than the fourth, but in *Rhodinocichla* the eighth and ninth primaries are the shortest and the ninth is even shorter than the secondaries. A very similar arrangement of primaries is however found in *Mitrospingus* which has the ninth primary shortest and the eighth only a little longer, though it exceeds the first. In *Eucometis*, the ninth is longer than the first and second, while the eighth is not much shorter than the fifth, sixth

and seventh. In *Piranga*, the wing is pointed by the ninth, eighth and seventh primaries, the other extreme from *Rhodinocichla*. The latter has nine secondaries and a quintocubital wing of course. There are twelve rectrices which are successively shorter from the middle pair outward. These feathers are notable for their breadth and softness; it is interesting to find the tail feathers of *Mitrospingus* similar.

Alimentary Canal. The arrangement of the intestine and the appearance of the entire alimentary canal is so similar to that of several other Passerine birds examined, *Dumetella*, *Piranga*, *Sciurus*, that no distinctive characters were found. The contents of the stomach were examined in two specimens and while much of the material was unrecognizable to my untrained eye, three items were determined; beetles of at least four species, one of which was a curculio; seeds, of which the most common was the hard gray achene of some sedge; large, irregular grains of sand, with rounded angles and of a bright ochre color. This combination seems to show clearly that the birds are chiefly ground feeders.

Palatine Region. The bony palate of *Rhodinocichla* yields what seems to me the best indication of its relationships. If one compares this part of the skull in tanagers and in wood warblers, two points of difference are shown which seem to be important. In the tanagers, the palatine processes are long and well developed while in the wood warblers they are short and rudimentary. In the tanagers, the maxillo-palatines are parallel for a short distance, about the length of the inflated portion, but in the warblers they are parallel for a considerable distance and the increasing divergence is less marked. Parker¹ examined and figured several species of each family, and I have examined *Piranga erythromelas* and *Sciurus norboracensis* in addition, and these differences while not ex-

¹ Parker, W. K., 1878, Trans. Zool. Soc. London, vol. 10, pp. 251-314, pls. 46-54. Compare especially figs. 1-6, pl. 46 and figs. 1-3, pl. 48. It may be remarked in passing that Parker makes no reference to a "secondary palatine process" in *Piranga*, although he examined *Piranga rubra*. Shufeldt figured these processes as found in *Habia* (Auk, Vol. 5, p. 439; 1888) and gave them a name. I find them very conspicuous in *Piranga erythromelas* and on consulting Lucas' figure (Proc. U. S. Nat. Mus., vol. 18, p. 505; 1895) it will be seen that he indicates them although he makes no reference to them. There is no trace of them in *Sciurus* or *Dumetella*, nor in *Rhodinocichla*. They appear to be associated with a strongly controstral beak, though Shufeldt says they are lacking in *Coccythraustes*.

traordinary seem fairly constant. They show more clearly in specimens than in Parker's figures, especially the position of the maxillo-palatines. Now in both these particulars, *Rhodinocichla* is a tanager. The palatine processes are well-developed though not as slender as in *Piranga*, nor as spike-like as Parker figures them for *Tanagra*. The maxillo-palatines are almost exactly like those of *Piranga erythromelas* both in form and position.

Sternum. Some years ago Shufeldt (1888, Auk, vol. 5, p. 442) made the statement that true tanagers "have an osseous bridge extending across the top of the manubrium to the anterior margin of the body of the sternum." He adds that it is absent in *Icteria* and in such Fringillidæ as he had examined. This seems such a trivial character and so unlikely to be constant or clearly shown, that I was inclined to give little heed to it. Nevertheless I made some dissections with the result, surprising to me, of finding this osseous bridge very clearly defined in *Piranga* and totally wanting in *Dumetella*, *Habia*, *Passerella* and *Sciurus*. I am forced to believe therefore that it is a character of no little importance, and it is interesting to find that in *Rhodinocichla*, this osseous bridge is as clearly shown as it is in *Piranga*.

Conclusions. In the British Museum catalogue (1881), Sharpe calls *Rhodinocichla* the "rose-breasted wren" and places the genus in the Miminæ near *Harporhynchus*, remarking that it is one of several genera which appear to connect the mocking-thrushes and the wrens. It was not until 1901 that Ridgway called attention to the important fact that there are only nine developed primaries in *Rhodinocichla* and that it must therefore belong in some one of the nine-primaried groups. He placed it finally at the end of the Mniotiltidæ with the comment that although it "is very aberrant as a member of the Mniotiltidæ, I do not know where else to place it." When Mr. Bangs placed the alcoholic specimens in my hands, he called my attention to the resemblance to *Mitrospingus* and suggested the possibility of *Rhodinocichla* being a tanager. The evidence which I have presented seems to me to justify the belief that this suggestion has revealed the probable relationships of the genus. The structure of the bony palate and of the sternum are characteristically tanagrine, while the wing and tail show a close relationship to *Mitrospingus*, which has quite generally been re-

garded as a tanager. It is true that the bill is not typically tanagerine but here again there is a close resemblance to *Mitrospingus*. It is a natural conclusion therefore that *Rhodinocichla* is to be regarded as a tanager which has become more or less specialized for a particular manner of life. As the stomach contents indicate a ground feeder, it may be that that method of finding its living has been the factor associated with its specialization.

EIGHTEEN SPECIES OF BIRDS NEW TO THE PRIBILOF ISLANDS, INCLUDING FOUR NEW TO NORTH AMERICA.¹

BY BARTON WARREN EVERMANN.

WITH the appointment of a naturalist in the fur-seal service July 1, 1910, and the organization, in the Bureau of Fisheries, of the Alaska Fisheries Service, July 1, 1911, the Bureau at once began the formation of plans for a comprehensive and thorough study not only of the life history of the fur seal but also of the scientific management and conservation of the fur-seal herd that has its breeding grounds on the Pribilof Islands in Bering Sea. The plan is broad in its scope and contemplates a thorough study of all the species of animals and plants found on or about those islands. Dr. Walter L. Hahn, at that time head of the department of biology in the state normal school at Springfield, South Dakota, was appointed naturalist in the summer of 1910. He arrived at St. Paul Island August 24 and immediately entered upon his duties with an energy and intelligence which could scarcely be excelled. His untimely death on May 31, 1911, from exposure in the ice-cold water of the village lagoon, resulting from the capsizing of a boat, was a severe loss to the fur-seal service and to biological science. During his few months on St. Paul Island Dr. Hahn, from the

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